

Notes on diesel pump timing on a V70 2.5 Tdi D5252T engine.

I have just changed the belts on my 1998 V70 diesel and thought that I would put some notes together for future reference and for the possible assistance of others.

My vehicle is an automatic so there may be some differences, especially around the flywheel timing marks.

The journey began with the appearance of the lambda light on the instrument panel and a distinct change in the engine note. Upon investigation I found that the tensioner pulley on the drive belt to the diesel injection pump was at an angle, clearly about to break terminally. I also found a tear in the cam drive belt about 2/3 of the width of the belt. Some forensic analysis later showed that part of the tensioner mechanism from the tensioner pulley had broken off and gone between the belt and the drive pulley causing the tear and probably the change in timing also. I was lucky that the belt didn't break totally.

Changing the belts had been on my list of things to do for a few weeks and this put the job at the top of my priorities.

So the job of changing the belts is mostly straightforward, the most difficult bit being the removal of the crankshaft bolt which, in common with most diesels is done up rather tightly. I managed to fabricate a tool to hold the crankshaft still to facilitate this job see illustration 1.



Illustration 1: Crankshaft locking tool

This was constructed from a piece of 75mm thick walled tube (cut and beaten to fit in the vibration damper centre) welded into a piece of 10mm plate cut to fit such that the protruding platform rested upon the engine mount bracket when loosening and the other side rested on the subframe rail when tightening.

Before using this though I wanted to make sure that I knew where top dead centre was and where all the appropriate timing marks were located. The following 4 illustrations show images of the various timing marks.

Illustration 2 shows the timing mark on the vibration damper. I have made this more obvious with the use of Tipp-Ex Shake'n Squeeze correction fluid.



Illustration 2: TDC Timing mark on vibration damper

Illustration 3 shows the timing mark on the cambelt lower cover. This also has been highlighted although it's not a good photo. This mark is at about 7.30, bottom left quadrant visible through the wheel arch liner when folded back.

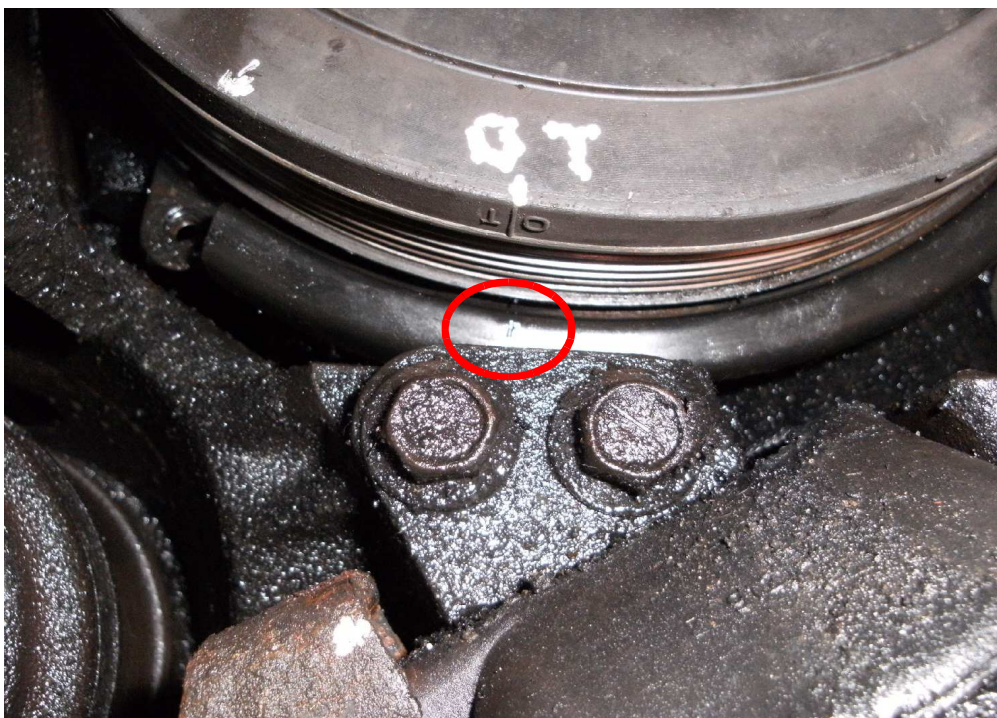


Illustration 3: TDC timing mark on Cambelt lower cover

Illustration 4 shows the locking bar for the camshaft. This can be fitted into an offset slot in the diesel pump end of the camshaft when no. 1 cylinder is at TDC (both valves closed.) after the pump drive pulley has been removed. This one is from a Sykes Pickavent set bought for an Audi 80 but seems to fit most VAG engines.



Illustration 4: Camshaft locking bar

Illustration 5 shows the initial set timing mark on the diesel pump flywheel inner face.

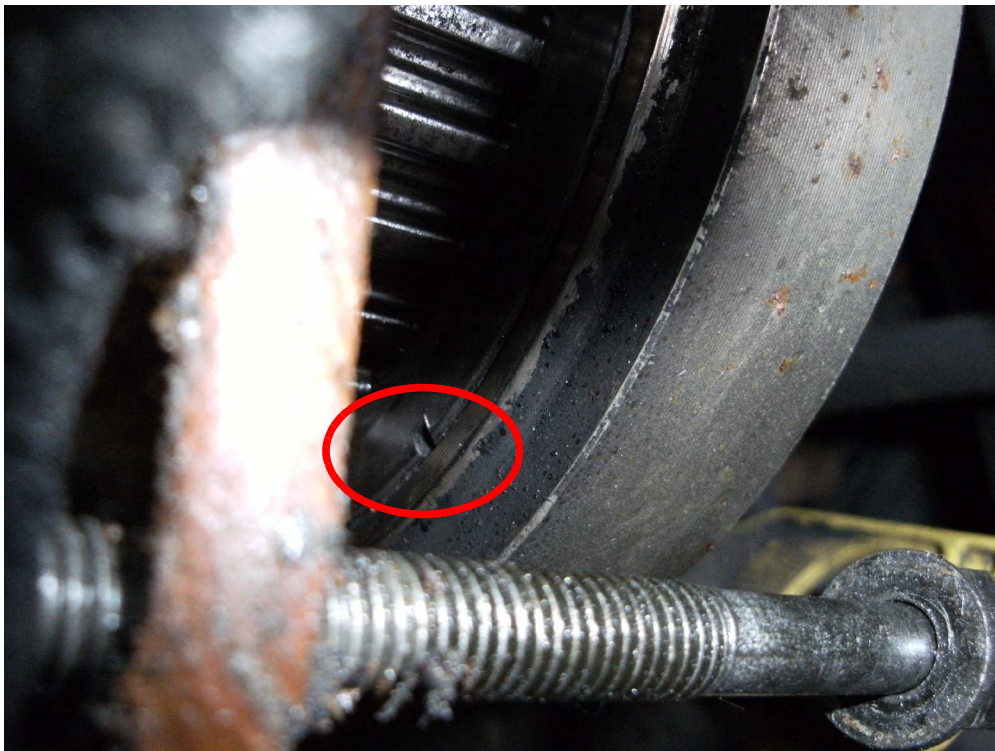


Illustration 5: Diesel pump flywheel timing mark

Illustration 6 shows the reference mark on the pump body against which the mark on the pump flywheel is aligned.



Illustration 6: Pump body timing mark

Illustration 7 shows the timing peg (highlighted white with Tipp -Ex and out of focus) through the inspection hole which is exactly at the bottom of the flywheel housing. Sorry for the poor quality photo.



Illustration 7: Timing peg on flywheel (fuzzy)

This lines up with a small pip on the inner face of the flywheel housing, ringed faintly in yellow.

Having lined up all these marks and locked the camshaft both belts and all tensioner and idler pulleys were replaced. The pump timing mark was aligned with the mark on the body with the engine at TDC. This gives an approximate starting point for the pump timing. In my case close enough for the engine to start but it was clearly not correct. When using VolFCR the timing was still too far out to use the pump timing function as the error code 718 kept popping up. I adjusted the pump timing by moving the belt one tooth at a time on the Camshaft pulley. This produced a 20 degree change in timing for each tooth moved. Moving the pump CW with respect to the camshaft retards the timing.

I couldn't get the timing any closer than about 10 degrees by changing the belt position. I then moved the toothed pulley on the camshaft by the equivalent of half a tooth. This got me within a couple of degrees. Fine tuning was then accomplished using the eccentric idler puller, re-tensioning the belt after each adjustment.

The engine is now running extremely sweetly albeit rather disgustingly caked in old oil.